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10:021,976	11/30/2001	Kun Wang	JCW-0103	2006

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EXAMINER

DANG, THUAN D

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 07/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/021,976

Applicant(s)

WANG ET AL.

Examiner

Thuan D. Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s): \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not support the term "aliphatic olefinic monomer" (see the entire specification for details).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 16, it is unclear if the olefinic monomers would be reacted to produce polymer during the contacting step. In other words, while the claimed process is a chemical production process, a chemical reaction step is not recited.

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Regarding claim 4, "such as" makes the claim indefinite since it is unclear if in addition to the two compounds recited in the claim, which substances the alkylating agents also include.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 9, and 10 rejected under 35 U.S.C. 102(b) as being anticipated by The English abstract of Japanese patent 70007522B.

The abstract discloses a step of contacting ethylene in the presence of a catalyst substantially the same as the applicants' claimed process (also see page 3, lines 7-15 of the specification of this application).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riccardo et al ("Polymerization of Styrene with Nickel Complex/Methylaluminoxane Catalytic Systems").

Riccardo discloses a contacting step of styrene (olefinic monomer) with a catalyst substantially the same as the applicants' claimed in the presence of solvent (the abstract; table 1; page 3, lines 17-21 of the specification of this application; also review the 112, 2<sup>nd</sup> paragraph).

Riccardo does not disclose using an aliphatic olefinic monomer for the physical contacting step (see the entire reference for details). However, it is expected that using any olefinic compound in the place of styrene in the contacting step of Riccardo would yield similar result. Note that the claimed process does not recite the reaction of the monomers (see the above 112 rejection).

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Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riccardo et al ("Polymerization of Styrene with Nickel Complex/Methylaluminoxane Catalytic Systems").

Riccardo discloses a process as discussed above.

Riccardo appears to be silent as to the pressure of the contacting step and the phase of the contacting step. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Riccardo process by selecting an appropriate pressure to optimize the contacting step under gas phase since it is expected that under any pressure in any phase, the Riccardo process yields similar results.

Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the English abstract of Japanese patent 70007522B.

The abstract does not disclose the condition of the contacting step. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Japanese process by selecting an appropriate temperature and pressure such as the applicants' claimed ones under the gas phase since it is expected that under any condition, the Japanese process yields similar results.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the English abstract of Japanese patent 70007522B in considered with Masters et al (4,533,651).

The abstract discloses a process as discussed above.

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The abstract appears to be silent as to a support for the catalyst. However, Masters discloses that silica can be used as a support for the oligomerization nickel catalyst (the abstract; col. 3, lines 53-68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Japanese process by using the silica as support to enhance the performance of the Japanese catalyst since Masters discloses that silica support also functions as a cocatalyst (col. 3, lines 53-68).

Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the English abstract of Japanese patent 70007522B in considered with Wang et al (6,120,692).

The abstract discloses a process as discussed above. The abstract does not disclose using an olefin containing impurities, namely sulfur compounds. However, Wang discloses that industrial olefins contains sulfur contaminants (the abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Japanese process by using these olefin feeds since it is expected that any olefin feed can be used to contact with the Japanese catalyst.

### ***Response to Arguments***

Applicant's arguments filed 5/15/03 have been fully considered but they are not persuasive.

The argument that one having ordinary skill in the art would recognize that a polymerization reaction is not necessarily analogous to an oligomerization reaction is not

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persuasive since both reaction are condensation reactions between unsaturated bonds of unsaturated compound.

The argument that it is clear from claims 1 and 16 and the examples that only oligomers are formed by the instant invention is not persuasive since the claims do have a chemical reaction step instead only a PHYSICAL contacting step is recited (see claims).

The argument that the paragraph found in paragraph [0013] on page 6, and [0026] on page 10 support "aliphatic" since all of the exemplified monomers are aliphatic monomers is not persuasive since this term "aliphatic" covers broader than exemplified monomers disclosed in the specification. For example, sulfuric acid is an acid, but a general acid includes sulfuric acid, but also any other acids (these acids are not sulfuric acid). Therefore, as discussed in the 112, 1<sup>st</sup> paragraph rejection, the amendment of claims 1 and 16 add new matters.

The argument that the Japanese patent disclose the co-oligomerization of ethylene and butadiene and no ethylene oligomers are formed in the Japanese process since as discussed above, applicants do **not** claim which monomers are reacting, which products are produced. Even more, claims do **not** recite a chemical reaction step (see claims).

The argument that since Po and Japanese patent disclose using liquid/solution monomers in running its styrene polymerization reactions, hence, there are no pressure measurement disclosed in Po is not persuasive since there is no measurement of pressure does not mean there is no pressure. Note that only in a vacuum condition, pressure is zero.

The argument that claims 13-16 does not involve any selective and recovery of olefin from the contaminated olefin stream as taught by Wang. Instead, the contaminants in claims 13-16 are incorporated into the feed and used in the oligomerization is not persuasive since



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applicants do not claim incorporating the contaminants into the feed (see claims). Instead, applicants just claim the feed contains contaminants (see claims).

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 703-305-2658. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Thuan D. Dang  
Primary Examiner  
Art Unit 1764

10021976.2nd  
July 28, 2003

A handwritten signature in black ink, appearing to read 'Thuan D. Dang', is written over the printed name and title. The signature is stylized with a large, sweeping initial 'T' and a long, horizontal stroke extending to the right.